LEWIS AND CLARK
CITY-COUNTY BOARD OF HEALTH

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April 13, 2007

Mr. Scott Brown
U.S. EPA, Federal Building
10 West 15th Street, Suite 3200
Helena, MT 59626

Subject: Comments on the Proposed Plan for East Helena Residential Soils

The Lewis & Clark City-County Board of Health (BOH) would like to take this opportunity to present comments to the United States Environmental Protection Agency (EPA) regarding the Proposed Plan for Final Cleanup of East Helena's Residential Soils and Undeveloped Lands (Proposed Plan). The mission of the Lewis & Clark City-County Health Department (the "Health Department") is to improve and protect the health of all County residents. The Health Department administers the East Helena Lead Education and Abatement Program and has worked collaboratively with the East Helena community, EPA, and the Montana Department of Environmental Quality (MDEQ) since 1996. Once the BOH received the Proposed Plan in January 2007, we performed a detailed review of the Plan, numerous supporting documents, as well as epidemiological, toxicological, and EPA guidance reports. In addition, the BOH has been involved in several discussions and informational sessions and has attended training for long-term stewardship of hazardous waste sites. A thorough review was necessary to provide substantive comments from the BOH's long-term public health perspective.

The role of the Health Department (including its governing Board of Health) will increase significantly once the EPA and Potentially Responsible Parties have completed remedial actions to alleviate health threats posed by contaminated soils in and around East Helena. Indeed, the Health Department will be the entity primarily responsible for implementation and management of the institutional controls associated with the cleanup alternatives, including not only the continuation of educational programs, but potentially verification sampling at proposed land developments and assessment of indoor contaminant levels.

Our primary responsibility for the East Helena cleanup is protection of public health. However, because of the management responsibilities and potential liability that would be imposed on the Health Department by the use of institutional controls, we also must comment on long-term efficacy of the Proposed Plan. Our review of the Proposed Plan and numerous supporting documents, including epidemiological and toxicological studies as well as EPA guidance and reports from other similar projects at listed National Priorities List (NPL) sites, has convinced us that EPA has not substantiated the rationale for selection of the Preferred Cleanup Alternative. Our reasons, provided in the form of general comments, specific comments and questions on the following pages, are generally based on a lack of supporting documentation, inconsistency with EPA guidance, and the use of uncertain assumptions by EPA to document contaminant exposure potential and predicted health risks.

The most obvious concern we have with the Preferred Cleanup Alternative, and one that has received the most public attention, has to do with cleanup levels for residential soils. EPA has proposed an action level of 1,000 parts per million (ppm) lead in soil for cleanup, despite the Agency's own deterministic risk assessment indicating a protective cleanup level would be 520 ppm. We acknowledge two elements of this debate. First, as EPA has pointed out and used as a justification for the higher action level, lead concentrations in children's blood have steadily decreased the past 10 years, and are now equivalent to national averages. This is a notable success for the agencies involved and the community of East Helena. The second component of the debate is, however, more compelling and stems from the Health Department's responsibility for health protection, now and in the future.

EPA's preferred remedy may only be currently protective of children's health (with respect to lead) because of the education and outreach program. This means the program will have to be implemented in perpetuity; otherwise, without adult awareness and intervention (in the form of voluntary testing of children) blood lead levels may well increase given the exposure scenarios remaining in East Helena yards and surrounding lands. Indeed, this is what EPA's own risk assessment would predict, with an action level of 1,000 ppm in residential soils.

The BOH has concerns regarding the long-term protectiveness of the preferred cleanup alternative and believe it relies too heavily on institutional controls like community education and blood lead testing. Clearly, an education and testing program would always be subject to adequate funding levels, advocate support, and changing political priorities. Our preference is for a remedy that would eliminate, or at least substantially reduce, the need for perpetual oversight, monitoring, education and intervention. We believe lower cleanup levels may achieve that objective.

This is not to say that the BOH is in disagreement with all aspects of the EPA's Preferred Alternative. We believe there are many positive attributes to alternatives incorporated in the Proposed Plan, not least of which are the achievements of the blood-lead education and monitoring program. However, we are convinced that a more protective remedy can and should be implemented, and this can only be done through a collaborative process involving, at a minimum, EPA, MDEQ, the East Helena community, the Health Department, and other appropriate stakeholders.

We understand the urgency felt by many in East Helena to make a final decision on residential soils and implement the remedy. Residents of East Helena deserve closure, not just from the disruption of yards and neighborhoods, but also with respect to future economic development of properties in and around the city. We concur that all effort should be taken to reach a decision. However, the BOH believes we should not sacrifice deliberative and substantiated decision-making to expedite a process that has already consumed more than twenty years of study and response. The BOH will commit all available resources to work with East Helena, MDEQ, EPA and other stakeholders in the coming months to develop a remedy that is fully protective of residents and minimizes, to the extent possible, future liability to the County and landowners.

Please do not hesitate to contact Melanie Reynolds, County Health Officer at 457-8910 should you have questions concerning our comments, or to discuss future deliberations for this important decision.

Sincerely,

Christine Deveny

Christine Deveny
Vice Chair
Lewis & Clark City-County Board of Health

Melanie Reynolds

Melanie Reynolds, M.P.H.
Health Officer
Lewis and Clark City-County Health Dept.

Cc: John Wardell, EPA
Sandi Olsen, MDEQ
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Mary Capdeville, MDEQ
Mayor Terrie Casey, East Helena
Lewis & Clark Board of County Commissioners
City-County Board of Health

Attachment: Lewis & Clark City-County Board of Health's comments

LEWIS & CLARK CITY-COUNTY BOARD OF HEALTH'S COMMENTS FINAL CLEANUP OF EAST HELENA'S RESIDENTIAL SOIL AND UNDEVELOPED LAND

1.0 INTRODUCTION AND PURPOSE

The Lewis & Clark City-County Board of Health (BOH) would like to thank the United States Environmental Protection Agency (EPA) for this opportunity to comment on the Proposed Plan for Final Cleanup of East Helena's Residential Soils and Undeveloped Lands (Proposed Plan). The mission of the Lewis & Clark City-County Health Department is to improve and protect the health of all County residents. The City-County Health Department administers the East Helena Lead Education and Abatement Program and has worked with the East Helena community, EPA, and the Montana Department of Environmental Quality (MDEQ) since 1996. Once the BOH received the Proposed Plan in January 2007, we performed a detailed review of the Plan, numerous supporting documents, as well as epidemiological, toxicological, and EPA guidance reports. In addition, the BOH has been involved in several discussions and informational sessions and has attended training for long-term stewardship of hazardous waste sites. A thorough review was necessary to provide substantive comments reflecting the BOH's responsibility to improve and protect the long-term health of residents in our communities. Our comments are presented below.

2.0 GENERAL COMMENTS

2.1 ARSENIC CLEANUP LEVEL, PRG OF 176 PPM

The BOH does not agree that the arsenic Preliminary Remediation Goal (PRG) of 176 parts per million (ppm) is health protective. The PRG was calculated using a target risk of 1.499E-04, which exceeds EPA's acceptable risk range of 1E-06 to 1E-04 (i.e., one in one million to one in ten thousand) (USEPA, 1991) and MDEQ's acceptable risk range of 1E-05 to 1E-06 (i.e., one in one hundred thousand to one in one million). Although EPA guidance indicates that when risks are being *estimated* they should be considered accurate to one significant figure (USEPA, 1989), the BOH does believe it appropriate to intentionally select the largest target risk that may mathematically be rounded down to 1.0E-04. In addition, EPA indicates a preference for remedies that will achieve the more protective end of the range (i.e., 1.0E-06). Therefore, the arsenic PRG should be recalculated using a target risk within both EPA's and MDEQ's acceptable risk ranges, as well as considering appropriate background concentrations. The BOH acknowledges that background concentrations in Montana may exceed 1.0E-05 (MDEQ, 2005) and must, therefore, be considered in the development of the site-specific PRG for arsenic in East Helena.

The recalculation of the arsenic RPG should include the contribution from the dermal exposure pathway that was previously omitted (ISSI, 1999). Considering a site-specific relative availability (RBA) for arsenic is not available, the RBA should be conservatively estimated in the 80 to 100% range (as was used in the 1989 [Hunter Services] and 1995 [Kleinfelder] risk assessments), rather than the estimate of 50% used to calculated the arsenic PRG (ISSI, 1999, 2001).

Cleanup levels selected for arsenic in soils at other mining and mineral processing sites also suggest the East Helena PRG is not protective. For example, 70 ppm of arsenic or greater in soils is the threshold selected by EPA for residential yard removal and replacement at the Vasquez Boulevard & I-70 superfund site in Denver. Arsenic cleanup levels for residential soils are all 100 ppm or less for the ASARCO/El Paso Smelter site, Coeur d' Alene basin, Jacobs

Smelter in Utah, Midvale Smelter in Utah, Sharon Steel in Utah, and ASARCO/Globe Site in Colorado. Closer to home, Montana DEQ has established a "generic" 40 ppm action level for arsenic in soil that is based on carcinogenic and non-cancer risk analysis (MDEQ 2005).

It is also worth referring to the 1991 Remedial Investigation/Feasibility Study (RI/FS) which presumably provides the basis for the Proposed Plan. This document assessed concentrations of a number of metals and metalloids in residential soils, and used a risk-based modeling approach to develop remedial goals. The target concentration identified in the RI/FS for arsenic is 45 ppm, approximately ¼ the PRG noted in the Proposed Plan (Hydrometrics 1991; see Table 10-6-1).

It is the opinion of the BOH that the arsenic contamination remaining in soils may well be a "source of concern" to the community in that cancer probability from exposure to these soils may exceed EPA's range of acceptable risk. It should be noted that EPA's Proposed Plan seems to acknowledge this possibility, in stating: "As arsenic concentrations in soil rise above that value, however, long term exposures (lifetime) present risks that may be unacceptable."(page 32). We would also note that it is erroneous to equate average arsenic levels below 80 ppm to "near natural levels." According to EPA's supporting documentation for East Helena, the background arsenic levels used for comparison range from 15 to 18 ppm, with an average of 16.5 ppm. (Hydrometrics 1991; Table 5-1-1).

2.1.1 Soil Sampling and Analysis for Arsenic

The soil sampling and analysis approach is not described in the Proposed Plan for either residential yards or undeveloped land. A Modification of the Administrative Order on Consent for the East Helena Residential Soils Removal Action (USEPA, 1992) indicates that 5 sampling points are used within each removal unit (i.e., residential yard quadrant). Soil is removed to the depth needed to reduce the remaining lead concentration to below 440 ppm and the arsenic concentration to below 100 ppm. The BOH requests that a detailed Standard Operating Procedure (SOP) be provided describing the soil sampling and analytical approach, including the justification for determining the depth to which soils are excavated in residential yards.

The analytical method is not described in the Modification, but we understand that field portable X-Ray Fluorescence (XRF) analyzers are used to determine arsenic concentrations. Because XRF technology is a field screening approach and is not considered as accurate as laboratory analyses (i.e., EPA Method 6000/7000 Series using EPA SW-846 protocols for Quality Assurance/Quality Control requirements [QA/QC]), the BOH recommends that a Quality Assurance Project Plan (QAPP) be implemented to validate the accuracy and precision of the field screening data (at least to a limited extent).

2.1.2 Arsenic Toxicity

The development of the arsenic PRG should also allow for the uncertainty associated with the toxicity of arsenic, a known human carcinogen. For example, the California Environmental Protection Agency (Cal-EPA) considers arsenic more toxic than EPA and has adopted a cancer slope factor for arsenic that is 9 times greater than the arsenic cancer slope factor available from EPA (USEPA, 2004a).

2.2 LEAD CLEANUP LEVEL OF 1,000 PPM

Although not clearly described in the Proposed Plan, the BOH understands (through correspondence and discussions with EPA) the lead cleanup level was determined based on the blood lead data from East Helena and a quantitative uncertainty analysis using EPA's Integrated Exposure Uptake Biokinetic (IEUBK) Model.

First, the BOH does not agree that the data from the blood lead studies should be used in establishing the lead cleanup level. EPA guidance indicates, "The Office of Solid Waste and Emergency Response (OSWER) recommends that blood-lead studies not be used to determine future long-term risk where exposure conditions are expected to change over time; rather, they be considered a snapshot of ongoing exposure under a specific set of circumstances (including community awareness and education) at a specific time" (USEPA, 2006a). It is the opinion of the BOH that several factors are likely contributing to the measured blood lead levels in East Helena and do not represent the future, potential health risks to soil and dust exposures. Factors that may be affecting the blood lead studies include, but are not limited to, community awareness/education, evaluation of a non-random, convenience sample (i.e., voluntary participation), the cleanup of several residential yards in East Helena since 1991, the cessation of smelter emissions, and the discontinuation of leaded gasoline. Furthermore, although the blood-lead studies appear to be representative both spatially and based on soil lead concentrations (USEPA, 2007), the blood-lead studies are not true epidemiological studies that incorporate several additional factors, such as socioeconomics and education level of the parents.

Second, differing opinions regarding the quantitative uncertainty analysis exist within EPA. It is the BOH's understanding that the EPA Region VIII toxicologists believe a quantitative uncertainty analysis can be used in conjunction with the IEUBK to develop a range of potential cleanup values; while, EPA's Technical Review Workgroup for metals and asbestos (TRW) believe a deterministic assessment resulting in a single cleanup value is appropriate (TRW, 2006). The TRW is an EPA interoffice workgroup with the specific mission to review applications of lead risk assessment methodologies and is responsible for developing national guidance and documentation on the structure, application, and validation of the IEUBK Model. The BOH does not have the level of expertise to determine which EPA opinion is the most scientifically valid for East Helena. In the interest of protecting public health, we believe it is prudent to use the more conservative approach, in which the deterministic assessment is used to generate a single cleanup value.

Consequently, the BOH believes that a deterministic approach using predictive blood lead modeling should be used to establish a health-protective cleanup level for lead in East Helena. Blood lead modeling should be focused on the most-sensitive potential receptors (i.e., children and fetuses). The IEUBK Model is appropriate for childhood receptors; however, the BOH has specific recommendations for input values that are described in the following section. EPA's Adult Lead Model is appropriate for estimating fetal blood lead concentrations for pregnant women exposed to lead contaminated soil (USEPA, 1996). Fetal blood modeling should be included in the development of a health protective lead cleanup level in East Helena. Specifically, a soil contact-intensive scenario should be evaluated to assess the health protectiveness of the lead cleanup level for fetal receptors (e.g., a pregnant female construction worker exposure scenario) (USEPA, 2004b).

2.2.1 IEUBK Modeling

In performing the IEUBK modeling, the BOH believes it is appropriate to use the site-specific data obtained for (1) the soil/dust absorption fraction of 71% *relative* bioavailability (35.5% when expressed as an *absolute* bioavailability) (USEPA, 1999b) and (2) the fraction of soil in dust term of 0.17. The remainder of the exposure parameters should not be adjusted from the default values, as described below:

- Soil Ingestion Rates - EPA guidance indicates the default soil and dust ingestion values are based on several observation studies of soil ingestion in children and are appropriate and representative estimates of soil ingestion for U.S. children. The IEUBK Model was calibrated and validated with the default soil/dust ingestion values; therefore, EPA (2006a) indicates it is unknown how the use of alternate ingestion rates would impact the model predictions. Adjustments to the soil/dust ingestion rates may only be made after approval by EPA's Office of Emergency and Remedial Response (OERR).

Before the soil/dust ingestion rates measured in the Anaconda study could be used in the IEUBK Model, the ingestion study (Stanek and Calabrese, 2000) must be submitted to OERR for review by the Technical Review Workgroup for metals and asbestos (TRW). If the OERR approves of the adjustment to the soil/dust ingestion rates, they will be incorporated into the guidance and shared among other EPA Regions (USEPA, 1999a). Therefore, the BOH believes the default soil and dust ingestion values are most appropriate.

- Geometric Standard Deviation (GSD) - EPA guidance (USEPA, 2006a) indicates that site-specific estimates of GSD should not be substituted for the default value without detailed, scientifically defensible studies documenting site-specific differences in child behavior or lead biokinetics. Such site-specific studies are not available for East Helena. Therefore, the BOH believes the default GSD is most appropriate.

The BOH appreciates the responses from and the discussions held with EPA Region VIII toxicologists regarding this issue. We understand from these discussions that the EPA Region VIII toxicologists have a differing opinion than the TRW regarding the use of variable inputs, specifically for soil ingestion rates and GSD (TRW, 2006). In the interest of protecting public health, we have chosen the more conservative of the EPA opinions (i.e., TRW).

Using the appropriate input values (as described above), the IEUBK Model predicts a lead cleanup concentration of 520 ppm (using the geometric mean as the point estimate). In other words, a lead cleanup concentration of 520 ppm would limit the risk of childhood blood lead levels exceeding 10 micrograms per deciliter (μg/dl) to 5% of the population (i.e., the current OSWER cleanup goal) (EPA, 1994).

2.2.2 Soil Sampling and Analysis for Lead

The soil sampling and analysis approach is not adequately described in the Proposed Plan for either residential yards or undeveloped land. A Modification of the Administrative Order on Consent for the East Helena Residential Soils Removal Action (USEPA, 1992) indicates that 5 sampling points are used within each removal unit (i.e., residential yard quadrant). Soil is removed to the depth needed to reduce the remaining lead concentration to below 440 ppm and the arsenic concentration to below 100 ppm. The BOH requests that a detailed SOP be provided describing the soil sampling and analytical approach, including the justification for determining the depth to which soils are excavated in residential yards.

The analytical method is not described in the Modification, but based on communications and discussions with EPA we understand that field portable XRF analyzers are used to determine lead concentrations. In addition, XRF measurements were initially validated against laboratory analyses, but were discontinued as the level of confidence increased with the XRF data. Because XRF technology is a field screening approach and is not considered as accurate as laboratory analyses (i.e., EPA Method 6000/7000 Series using EPA SW-846 protocols for Quality Assurance/Quality Control requirements [QA/QC]), the BOH recommends that a QAPP be implemented to validate the accuracy and precision of the field screening data (at least to a limited extent).

In addition, it is the BOH's opinion that the lead cleanup level should be based on the lead concentration in the fine soil fraction. EPA guidance for sampling and analysis of soil at lead sites (USEPA, 2000) indicates that the concentration of lead from the fine fraction of soil (<250 microns) is relevant for exposure from incidental soil ingestion and should be used over bulk soil analysis. The fine soil fraction is the particle size soil fraction expected to stick to fingers and, thus, become incidentally ingested. In addition, the fine soil fraction is the most likely fraction to accumulate in indoor environments as dust. The Technical Review Workgroup for metals and asbestos (TRW) reviewed data from several Superfund sites and demonstrated that the

concentration of lead in the fine soil fraction differs from the concentration in the bulk soil with an enrichment of lead and other metal contaminants observed in the fine soil fraction.

The EPA lead models consider the fine soil fraction to be the primary source of the ingested soil and dust. Fine soil fraction lead concentrations are the recommended input for both the IEUBK and the Adult Lead Model (USEPA, 2000). A site-specific lead enrichment equation can be developed to relate lead concentrations in the bulk soil and fine fraction (USEPA, 2000).

2.2.3 Lead Toxicity

The development of the lead cleanup level should also allow for the uncertainty associated with the toxicity of lead, a probable human carcinogen. Recent data indicates that blood lead levels below 10 µg/dl may cause significant health effects. EPA (2006b) indicates "Even children with low lead exposure levels (having blood lead levels of 5 to10 µg/dl or, possibly, somewhat lower) are at notable risk, due to the apparent non-linear dose-response relationships between blood lead and neurodevelopmental outcomes". Further, EPA (2006b) indicates "There is no level of lead exposure that has yet been identified, with confidence, as clearly *not* being associated with possible risk of deleterious health effects". Regarding fetal exposure, studies have found that women who have been exposed to lead in childhood have accumulated large stores in their bones that may mobilize from bone to blood during late pregnancy and lactation. An increased risk of spontaneous abortion, neurobehavioral deficits in offspring and, in some studies, gestational hypertension, have been reported at pregnancy blood lead levels at concentrations less than 10 µg/dl (EPA 2006b).

The BOH appreciates the information provided from EPA (2007) regarding the Centers for Disease Control explanation for the present level of concern of 10 µg/dl (used in the current OSWER cleanup goal). Indeed from this explanation, and recognition that many current environmental and public health policies at the federal level do not represent scientific consensus, it is possible that the level of concern may not be lowered at anytime in the foreseeable future. Then again, over the past few decades, the blood lead level of concern has decreased from 40 µg/dl to 10 µg/dl. The BOH believes it is reasonable to anticipate the level may decrease again in the future. Our belief is supported by substantial current scientific literature. EPA has noted as recently as October, 2006: "Some recent studies of Pb neurotoxicity in infants have observed effects at population average blood-Pb levels of only 1 or 2 µg/dl; and some cardiovascular, renal, and immune outcomes have been reported at blood-Pb levels below 5 µg/dl." (EPA 2006b) As such, the lead cleanup level should be developed taking into consideration this possibility.

2.3 CLEANUP ALTERNATIVES

The BOH does not believe a sufficient number of cleanup alternatives were developed in the Proposed Plan. In particular, the range of alternatives for residential soils was too limited. The Proposed Plan does not:

- Describe the other remedial alternatives that were considered and dismissed from consideration; or
- Provide rationale for why protective remedies (such as testing of indoor spaces and insulation removal, where warranted) are not included in the alternatives.

EPA should expand the development of alternatives to allow for a more thorough review of potential remedies for East Helena soils. Funding mechanisms should be included in and described for all of the alternatives.

Specifically, the BOH requests that alternatives be developed and evaluated with the goal of fully remediating the lead and arsenic contamination in East Helena to health protective levels that would minimize the complexity and longevity of the institutional controls. Elements of such an alternative should include, but not be limited to, the following:

- Complete the remediation of residential soils to health protective cleanup goals
- Complete the remediation of streets and road aprons to health protective cleanup goals
- Prepare a projected land use forecast through the Joint Consolidated City-County Planning Board and the East Helena City Council with public participation, so as to accurately forecast and designate future land uses (and thereby establish appropriately protective soils cleanup levels)
- Develop a cost estimate to remediate undeveloped lands based on the projected land use forecast
- Fully fund remedial approaches based on projected land use
- Provide funding for residents of homes (that were constructed prior to closure of the smelter) within the East Helena study area to replace exposed insulation (such as in attics) that may have accumulated substantial quantities of airborne contaminants
- Establish Institutional Controls to manage the remediation fund and oversee remediation and to track mandatory and voluntary remedial actions.

2.4 PREFERRED CLEANUP ALTERNATIVE

The BOH has concerns that the Proposed Plan does not appear to conform with EPA guidance or statutory requirements. In particular, the lack of transparency in development and screening of alternatives has prevented the public from understanding the range of possible alternatives considered, or the benefits and drawbacks associated with these options. Typically, a proposed plan is tiered from a remedial investigation/feasibility study (RI/FS), which provides the detailed supporting documentation for possible alternatives: costs, effectiveness, technical feasibility, and so forth. However the only RI/FS referenced in the Proposed Plan dates to 1991 (Hydrometrics, 1991). Considering the 16 years of experience EPA has gained since that RI/FS, studying and attempting to remediate metals-contaminated sites across the U.S., there surely have been technological and policy advances that should be incorporated into the alternatives. It should be noted that most of the EPA guidance concerning risk assessment, remedial actions, site studies, and decision-making has been published or revised since 1991, strongly indicating that the sole RI/FS for soils cleanup should have been revised, or at least supplemented, before publication of a Proposed Plan.

EPA has indicated that the RI/FS has been updated, and notes on page 17 of the Proposed Plan: "Many of the alternatives developed at that time, however, are no longer considered viable; due principally to the substantial amount of cleanup that has since occurred. Therefore, EPA developed new alternatives that incorporate many of the features of the original alternatives, but are relevant for current conditions." If this is the case, EPA should provide the new analysis disclosing how and why some alternatives are no longer viable. The supporting documentation for new alternatives should be made available to the public for review, and the Proposed Plan should specifically reference these documents.

One example of the problems raised in using a 15+ year old RI/FS is conformance with guidance and statute. For example, as noted in the Proposed Plan (page 26), the alternatives must be evaluated against nine criteria. One of the threshold criteria that must be met is compliance with state and federal regulations (i.e., Applicable or Relevant and Appropriate Requirements [ARARs]). The Proposed Plan indicates the EPA has evaluated the alternatives for compliance with ARARs, but there was no documentation referenced or readily available for public review that would substantiate this conclusion. The only document discussing ARARs that we found applicable to the East Helena residential soils is the 1991 RI/FS (Hydrometrics, 1991). It is reasonable to expect that some state and federal regulations will have changed since that time, and an updated analysis is critical. If this has been done (for example, with the "new" alternatives that EPA references on page 17 of the Proposed Plan) then EPA should make the analysis readily available to the public.

Similarly and in general, the EPA should supply a specific list of reference documentation pertinent to the Proposed Plan. Otherwise, it is very difficult for the public and public agencies to identify and locate documentation relevant to the subject.

According to EPA guidance, the Proposed Plan should provide "either a summary of the support agency's agreement with the plan or its dissenting comments" (EPA 1999c). This requirement is clearly supported by statute, as "EPA must respond to State comments.....on the Preferred Alternative when making the RI/FS and Proposed Plan available for public comment" (NCP §300.515(d)(4)). A responsiveness summary addressing comments from MDEQ was not included in the Proposed Plan. By not making interested parties fully aware of MDEQ's dissenting comments and publishing them in the proposed plan, EPA has failed to meet its statutory public disclosure obligations or follow its own guidance for the CERCLA decision-making process.

2.4.1 Scope of Preferred Cleanup Alternative

For the Preferred Cleanup Alternative to be protective of human health and environment, it is the BOH's opinion that the scope of the alternative must be expanded. Specifically, the Preferred Cleanup Alternative should address the following:

- Arsenic - The Proposed Plan does not present cleanup alternatives specific to arsenic. Rather, it indicates that because arsenic is co-located with lead, it should be mitigated through the remedy directed at lead in soils. It is the opinion of the BOH that the Preferred Cleanup Alternative should be revised to ensure the arsenic cleanup level is attained. For example, Alternative 2R should be revised as follows: Selected Soil Removal (lead cleanup level [ppm] and arsenic cleanup level [ppm]), Continuing Community Education, and Institutional Controls.

- Attic Dust – To prevent subchronic, acute exposures to high concentrations of metals that may be present in the attic dust of homes in East Helena, the Preferred Cleanup Alternative should include measures to prevent such exposures. Acute exposures to attic dust have been reported in other smelter areas (Montana Standard, 2004). In addition, the Record of Decision (ROD) for the Butte Priority Soils Operable Unit of the Silver Bow Creek/ Butte Area Superfund Site includes measures to mitigate attic and other household dust traps that may have accumulated substantial metal and metalloid concentrations during operational years of the smelter.

- Other potential pathways for metal exposure - for example contaminated soil in earthen – walled basements or crawl spaces, and dust in heating and venting ducts.

- Rodeo Grounds – The soils of the rodeo grounds contain very high concentrations of lead and arsenic. To prevent subchronic, acute exposures largely due to fugitive dust emissions, the Preferred Cleanup Alternative should include measures to prevent such exposures.

- Prickly Pear Creek Upstream Contaminant Sources – The Proposed Plan should include measures to assure that upstream contaminant sources, such as slag piles, ore storage areas, and the process ponds, are adequately contained or removed to prevent re-contamination of the Creek sediments during major storm and flooding events.

2.4.2 Long-Term Effectiveness and Permanence of the Preferred Cleanup Alternative

The City-County Health Department administers the East Helena Lead Education and Abatement Program. The purpose of this Program is to prevent and reduce elevated blood lead levels in children and we assist in this effort by coordinating blood lead screenings, providing education to

at-risk groups, and conducting voluntary environmental assessments. The BOH believes this program has been effective and are pleased with our working relationship with EPA and MDEQ. However, the BOH believes the Preferred Cleanup Alternative relies too heavily on institutional controls, including community education, which, in turn, minimizes the alternative's long-term effectiveness and permanence. Because institutional controls play a very significant role in the Preferred Cleanup Alternative, the BOH believes it will necessitate in-perpetuity blood lead monitoring of the children of East Helena. In addition, contamination will remain at undeveloped lands (until the land use is changed) requiring the City-County Health Department and other local government entities to oversee these undeveloped lands and their potential, future remedial actions.

It is the opinion of the BOH that additional alternatives should be developed and evaluated that will focus on the Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment and, thereby, maximize the Long-Term Effectiveness and Permanence of the remedy.

2.4.3 Implementability of the Preferred Cleanup Alternative

2.4.3.1 Deep Tillage for Undeveloped Lands

The BOH has concerns with the implementability of the deep tillage remedy for undeveloped lands proposed under the Preferred Cleanup Alternative. These concerns must be addressed prior to the selection of the Final Cleanup Alternative. These concerns are listed below:

- In Place Treatment - deep tillage should not be presented as a *treatment* remedy, nor is it an *innovative* technology (it has been used on sites for many years, and was included as an option for undeveloped lands in East Helena more than 16 years ago; Hydrometrics 1991). Deep tillage dilutes the contaminant concentration in the surface soil through mixing with deeper soil. Further, EPA's characterization of the "reductions" in lead concentrations are misleading, as the Proposed Plan does not also point out that the total mass of contaminant in the subsurface is not lessened by tilling.

- Mobilization - deep tillage may mobilize contaminants to concentrate in other, deeper strata at levels even greater than were found in the target shallow zone. The BOH believes the EPA should provide a more detailed assessment of the mobilization potential associated with this remedy.

- Rocky geology – rock out-croppings in the surface and near surface geology may prevent effective deep tillage of soils. In a treatability plot performed in the Asarco West Field, the maximum attainable tillage depth was 20 inches even with prior field preparation using a dozer to rip to 15 inches below ground surface (Hydrometrics, 1997). The desired tillage depth for the treatability plot was 30 inches. Considering that numerous subsurface rocks will likely be encountered in many locations, the BOH believes the EPA must provide an alternate remedy for such locations/conditions.

- Increased soil volume – deep tillage will likely increase the volume of soil as "loose" soil volumes are typically significantly greater than "compact" soil volumes. The Preferred Cleanup Alternative must consider options for the increased soil volume, particularly if the approach is not successful in achieving the lead and arsenic cleanup levels.

- Weed management – disturbance of soil through deep tillage may cause weed infestation problems. Weed management practices and funding should be considered for the Preferred Cleanup Alternative.

2.4.3.2 Institutional Controls

The BOH has several concerns with the implementability of the institutional controls that must be addressed prior to the selection of the Final Cleanup Alternative. These concerns are listed below:

- Effectiveness in Preventing Exposures - The institutional controls, common to all the cleanup alternatives (except "No Action"), play a significant role in the protection of human health in East Helena and the surrounding area. Considering the health protectiveness of the cleanup alternatives rely heavily on the effectiveness of the institutional controls, the BOH would like information regarding their anticipated effectiveness prior to the selection of the Final Cleanup Alternative. Such information should be gathered from other hazardous waste sites where the selected remedy relied heavily on institutional controls. In addition, an approach should be defined to monitor or measure the effectiveness of the institutional controls in East Helena over time. For example, will future blood lead data be the only measure of effectiveness, or will additional data, such as in-home environmental assessments, community interviews, or enforcements, also measure/monitor effectiveness?

- Content – To effectively develop and implement institutional controls, the BOH requires more information regarding their content. EPA should provide a list of recommendations and ideas that have been used successfully at other hazardous waste sites, as well as operational/management ideas. In addition, the BOH requests examples of the specific legal language used to establish "successful" institutional controls at other sites.

- Enforceability – The BOH has concerns with enforceability of the institutional controls. Prevention of certain potential exposures does not appear to be enforceable, such as exposures within residences (e.g., attic dust) and the long-term Best Management Practices (BMP) for agricultural areas. Prior to the selection of the Final Cleanup Alternative, EPA must provide examples of specific mechanisms to be included in the Institutional Controls for such exposures.

- Funding – The City-County Health Department does not have the financial resources to develop, implement, manage, and enforce the institutional controls. As such, the BOH will accept responsibility for the institutional controls only if sufficient funding will be available. The BOH health requests that the EPA provide detailed information and justification regarding the development of the cost estimates for the institutional controls, as well as the proposed funding mechanisms. Specifically, the BOH would like to ensure the following types of services are included in the cost estimates.

    - Soil sampling and analysis
    - Blood lead monitoring
    - In-home environmental assessments and contaminant abatement
    - Management of agricultural areas – the City-County Health Department does not have expertise in agricultural BMPs, nor does Lewis & Clark County have a department specializing in agricultural practices.
    - Air quality monitoring to evaluate the effectiveness of the agricultural BMPs
    - Expansion of the community education programs to include families not residing in East Helena, but whose children attend school or daycare in East Helena.
    - Free permits – EPA emphasized free permits, presumably to ensure that homeowners and landowners are not unduly burdened by the institutional controls. The permits may have a significant cost to the City-County Health

Department through permit preparation, review and administration; soil testing; and in-home environmental assessments.

- Contingencies – the cost estimates should allow for the possibility that the cost estimates will not be sufficient to adequately manage the Institutional Controls.

2.4.4 Community Acceptance

The Proposed Plan indicates (p. 25) that developers or land owners that wish to change the use of undeveloped lands must meet all the requirements and specifications for the new use and will bear all associated cleanup costs. This element of the Preferred Cleanup Alternative could have significant economic impacts to the community of East Helena. Therefore, the EPA should provide justification for transferring the cost of cleanup of undeveloped lands from the PRP to the landowner and/or developer. EPA should also provide a legal analysis regarding liability under the Comprehensive, Environmental Response, Compensation and Liability Act (CERCLA) describing how the liability is transferred from the PRP to the landowner/developer.

3.0 SPECIFIC COMMENTS

Page 1, 1st column, paragraph 3 – The proposed plan applies only to existing residential soils and offers recommendations only for undeveloped lands. Will undeveloped lands be monitored only through institutional controls after the Record of Decision (ROD) is approved?

Page 1, 2nd column, last bullet – Please provide information regarding how Burlington Northern and Montana Rail Link will be involved in the railroad right-of-way cleanup.

Page 2, 2nd column, paragraph 2 – Please provide a description of EPA's 5-year review. Who will perform the 5-year review? Will random sampling be conducted? Will an evaluation plan or protocol be developed and in place? How will it be determined whether the cleanup was sufficient or whether the institutional controls are working? What if problems are found?

Page 5, Figure 1 - Please provide a map showing the East Helena City Boundary, lands owned by ASARCO, the railroads and other major landowners.

Page 5 – Please provide a figure depicting the extent of arsenic contamination in East Helena (similar to Figure 1 that depicts the extent of lead contamination).

Page 10, 2nd column, paragraph 2 – Who is the risk management team? The proposed plan states, "All of the *alternative input values* utilized were specifically requested by the *risk management team* and are deemed to be scientifically valid." Please identify the composing members of the risk management team.

Page 16, 1st column, last paragraph – Please provide the reference for the recent risk-calculations establishing risk-based concentrations of lead and arsenic in soils for undeveloped lands for workers and recreationists.

Page 17, 2nd column, first complete paragraph, under the 1R alternative – Please describe the "other sources" of funding that may be available? Who would be responsible for securing those sources of funding?

Page 19, The BOH requests that the EPA state the local government will only accept the responsibility of Institutional Controls as long as there is funding in place.

Page 19, 2nd column, Paragraph 1 - Why are yard averages or property averages being used versus the protocol in place which uses individual quadrant analysis? Does EPA propose changing the protocol to yard averages?

Page 21, 2nd column, Paragraph 1 – this states "...it is simply not practical to eliminate all sources of and pathways for lead exposure from this large site (the rodeo grounds)." EPA provides no substantiation for this conclusion.

Page 21, 2nd Column, Paragraph 2 - Who will have the ultimate long-term responsibility for the management, operation, and monitoring of the soil repository at the East Fields? Who covers the cost of this? Will other soil repository areas be needed for the cleanup? Please provide more details regarding this topic and the area.

Page 26 and 27 – The Proposed Plan indicates that alternative 2R and 3R are "by all known measures" equally protective. Please explain further. What are "all known measures"?

Page 29, Community Acceptance, Paragraph 2. This paragraph is incorrect. While the BOH does support protection of human health, we do not link human health protection to such criterion as "at the most reasonable cost." The BOH requests this paragraph be omitted.

4.0 REFERENCES

Hunter Services, Inc., 1989. Comprehensive Endangerment Assessment. East Helena, Montana. June 1989.

Hydrometrics, 1991. Remedial Investigation/Feasibility Study for Residential Soils, Wilson Ditch Sediments, and Vegetation.

Hydrometrics, 1997. Asarco West Field Deep Till Remediation. Prepared for Asarco Inc. July 1997.

Kleinfelder, 1995. Human Health Risk Assessment for Residential Soil, East Helena Plant, East Helena, Montana. Prepared for ASARCO, Inc. July 1995.

ISSI, 1999. Memorandum from Tracy Hammon, ISSI, to Chris Weis, EPA, Region 8, regarding East Helena Risk Assessment Review and PRG Calculation. March 11, 1999.

ISSI, 2001. Memorandum from Tracy Hammon and Bill Brattin, ISSI, to Scott Brown, EPA, Region 8 regarding East Helena PRG for Arsenic. December 3, 2001.

Montana Department of Environmental Quality. 2005. Action Level for Arsenic in Surface Soil. April.

Montana Standard, 2004. "Anaconda Homeowner Finds Danger Lurking in the Attic". November 29, 2004.

Stanek and Calabrese, 2000. Daily Soil Ingestion Estimates for Children at a Superfund Site. Risk Anal. 20:627-635.

USEPA, 1989. Risk Assessment Guidance for Superfund. Volume 1, Human Health Evaluation Manual, Part A. USEPA/540/1-89/002. Washington D.C.: GPO.

USEPA, 1991. Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions. OSWER Directive 9355.0-30, April 22, 1991.

USEPA, 1992. Modification of Administrative Order on Consent for the East Helena Residential Soils Removal Action. Executed October 8, 1992.

USEPA, 1994. OSWER Directive #9355.4-12. Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. EPA/540/F-94/043, PB94-963282, August 1994.

USEPA, 1996. Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil. December 1996.

USEPA, 1997. Exposure Factors Handbook. Update to Exposure Factors Handbook EPA/600/8-89/043 – May 1989.

USEPA, 1999a. Short Sheet: IEUBK Model Soil/Dust Ingestion Rates. EPA 540-F-00-007, OSWER 9285.7-33. December 1999.

USEPA, 1999b. Short Sheet: IEUBK Model Bioavailability Variable. EPA 540-F-00-006, OSWER 9285.7-32. October 1999.

USEPA 1999c. A Guide to Preparing Superfund Proposed Plans, Records of Decision, and other Remedy Selection Decision Documents. July.

USEPA, 2000. TRW Recommendations for Sampling and Analysis of Soil at Lead (Pb) Sites. EPA/540/F-00-010. April 2000.

USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA, 2004a. EPA Region 9 Preliminary Remediation Goals. Accessed via the Internet at www.epa.gov/region9/waste/sfund/prg/, October 2004.

USEPA, 2004b. What is an appropriate soil ingestion rate for a construction scenario (*i.e.*, soil contact-intensive scenario)? EPA Adult Lead Methodology Frequently Asked Questions (FAQs). Accessed via the Internet at http://www.epa.gov/superfund/programs/lead/almfaq.htm. April 29, 2004.

USEPA and Syracuse Research Corporation, 2005. Re-Evaluation of the IEUBK-Based Clean-up Level for Lead in the Soil in East Helena, Montana.

USEPA, 2006a. Frequent Questions from Risk Assessors on the IEUBK Model. Accessed via the Internet at www.epa.gov/superfund/programs/lead/ieubkfaq.htm. Last updated April 19th, 2006.

USEPA, 2006b. Air Quality Criteria for Lead, Volume I of II. EPA/600/R-5/144aF. October 2006.

USEPA, 2007. "USEPA Region 8 Responses to Questions Asked by the City-County Health Board" provided in a letter to Melanie Reynolds, Health Officer, Lewis and Clark City-County Department of Health. March 13, 2007.

Technical Review Workgroup (TRW), 2006. Transmittal Memorandum from Mike Beringer, Jim Luey, and Aaron Yeow of the TRW to Susan Griffin and Aubrey Miller, US EPA Region 8 regarding TRW's review of technical issues at the East Helena site, dated February 17, 2006.